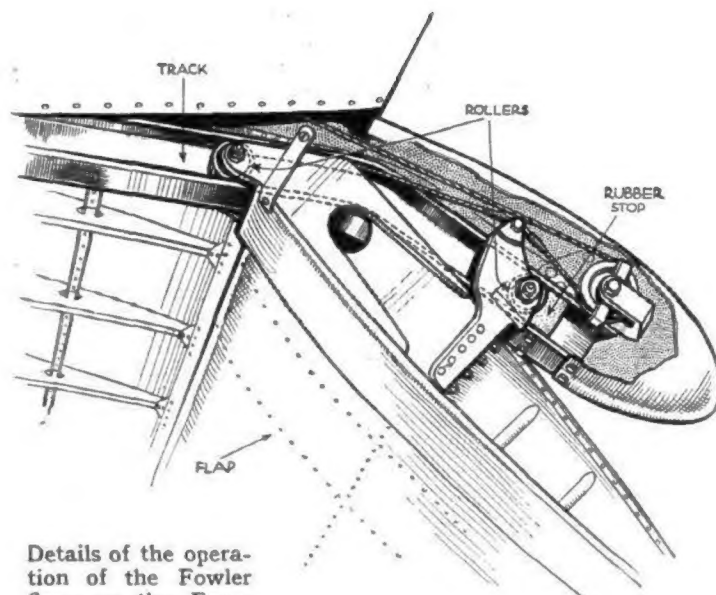


taken out of each engine when flying at an altitude of 13,000 feet. At the same height, but at a cruising speed of 225 m.p.h., the range is 1,590 miles. In calculating these figures it is considered that ten gallons of fuel will be used in warming up the engines and a factor of 0.98 is used, in the formula concerned, to allow for range reduction due to the necessity for climbing to a suitable cruising altitude.

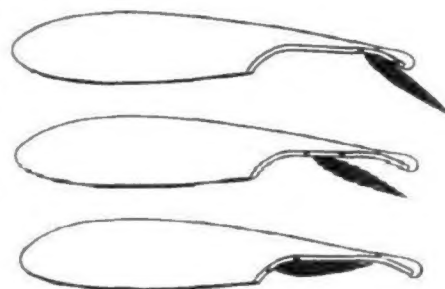
When allowance has been made for an average headwind of 20 m.p.h. and for a fuel reserve providing a further three-quarters of an hour's flying, the ranges are 1,730 and 1,295 miles at speeds of 184 and 225 m.p.h. respectively. In all cases the ranges are calculated at the maximum all-up weight and are therefore to be considered as conservative, since this weight would, by the reduction of fuel, be considerably lessened during a trip.

By means of the various graphs issued by the Lockheed Corporation, one of which, for block-to-block speed calculation, is reproduced on p. 295, the pilots are able to get the best results out of the Fourteen and also be certain that in difficult conditions a terminal may always be reached with an ample fuel reserve for a return to another aerodrome if this terminal happens, after all, to be weather-bound.

These graphs give the variations in speed with altitude at different powers, the best gliding and climbing speeds, times and distances, the block-to-block times and speeds, and the effect of different winds on these speeds. It is interesting to know that the speeds and times of descents are calculated on a basis of 300 ft./min. in the interests of passenger comfort, and that the best climbing speed at cruising power is taken as being approximately 135 m.p.h.



Details of the operation of the Fowler flaps on the Fourteen. It will be seen how, with the use of a single operating cable and a special track or guide, the flap is arranged to move through different positions. Three of these positions are shown diagrammatically on the right.



A BLOHM and VOSS TORPEDO BOMBER

Internal Torpedo Stowage : Tubular Spar : Clean Undercarriage

THE latest German military aircraft of which details have been released is the Blohm and Voss Ha 140 twin-engined, twin-float general-purpose seaplane which can be used as a torpedo carrier, a bomber, or a long-range reconnaissance machine.

In layout the machine is a cantilever semi-high-wing monoplane of all-metal construction fitted with two 800 h.p. B.M.W. 132 nine-cylinder radials mounted forward of the centre section. The outer wing panels are of trapezoidal shape and are attached to the centre section by large threaded flanges.

The torpedo or bomb load is accommodated internally, being covered during flight by retractable shutters which protect it against the spray during take-off.

The twin floats are attached to the centre section by single tubular struts with large streamlined fairings.

As on all Blohm and Voss machines the wing structure was designed by Dr Richard Vogt. There is a tubular spar passing

through the fuselage. This is of welded steel construction and serves as a fuel tank. Leading and trailing edges are detachable light-metal assemblies so that the controls are easily accessible. The tubular spars for the outer panels are composed of conical riveted duralumin halves.

A novel feature is the aileron control, embodying a new rotary system whereby movements of the wheel are transmitted to revolving shafts geared to the ailerons.

Electrical operation is specified for the flaps. After switching on, the flaps are depressed to a preselected position.

There are two gun positions, the forward one being in the form of a revolving turret.

Data are : Span, 68ft. 10in.; length, 75ft.; height 18ft. 5in.; wing area, 941.8 sq. ft.; weight empty, 13,889 lb.; gross weight, 18,739 lb.; top speed (at sea level), 199; maximum cruising speed, 183; landing speed, 68 m.p.h.; climb to 9,840ft., 11 min. 30 sec.; service ceiling, 16,400ft.; normal range, 715 miles; maximum range, 1,553 miles.



The Ha 140 exhibits typical Blohm and Voss characteristics, e.g., twin rudders and single-strut float attachments.